

# **Operation of the Lower Granite Dam Adult Trap, 2005**

Jerrel R. Harmon

Report of research by

Fish Ecology Division  
Northwest Fisheries Science Center  
National Marine Fisheries Service  
National Oceanic and Atmospheric Administration  
2725 Montlake Boulevard East  
Seattle, Washington 98112-2097

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## **EXECUTIVE SUMMARY**

During the fall and winter of 2005 we operated the adult trap at Lower Granite Dam from 6 September through 21 November. During this period, we collected and handled a total of 1,799 fall Chinook salmon. Of those fish, 928 adults and 126 jacks were transported to Lyons Ferry Hatchery on the Snake River in Washington. In addition, 419 adults and 45 jacks were transported to the Nez Perce Tribal Hatchery on the Clearwater River in Idaho. The remaining 281 fall Chinook salmon were passed upstream. During the same period of trap operation, we collected and handled a total of 19,121 steelhead. We documented 95 freeze brands on adult steelhead that had been previously marked and released as juveniles in the Snake River Basin. Between 21 September and 9 October, we used the trap to radio-tag 36 adult coho salmon for the Nez Perce Tribe.



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## INTRODUCTION

Collection and sampling of adult salmonids is an integral part of many studies at Lower Granite Dam, the furthest upstream dam on the Snake River that accommodates adult fish passage. Use of the adult trap began in 1975, when Lower Granite Dam was completed (Harmon 2003), with operation conducted primarily by the National Marine Fisheries Service (NMFS, NOAA Fisheries) staff, in cooperation with other agencies.

The demands on use of the Lower Granite Dam adult trap have increased in recent years, and are expected to continue to increase. Current uses include fall Chinook salmon *Oncorhynchus tshawytscha* broodstock collection; run-reconstruction sampling; and sampling of PIT tagged fish from transportation, life history, and radiotelemetry studies (both tagging and tag removal at the adult trap). Continued operation of the Lower Granite Dam adult trap will benefit listed stocks by:

1. Reducing risks to the fall Chinook salmon ESU by improving hatchery practices (i.e., being able to collect and use natural-origin fish for broodstock will improve the integration between natural-origin and hatchery-origin fish);
2. Boosting production of fall Chinook salmon in underutilized areas of the Clearwater Basin by using natural-origin fish collected at the trap;
3. Reducing risks to ESUs from atypical straying of hatchery-origin fish from areas outside the Snake River Basin (i.e., allowing the removal of unusual numbers of stray fish);
4. Providing information on age-class distribution and hatchery/wild composition for spring/summer Chinook salmon and steelhead *O. mykiss* returns to improve understanding of ESU status and provide critical information needed for run reconstructions;
5. Providing critical fall Chinook salmon life history information (from scale samples) to better manage the stock.

Although the adult trap at Lower Granite Dam has been operated for many years, in mid 2005, the Bonneville Power Administration began funding trap operations. This brief report summarizes adult trap operations during fall and winter of 2005.





## METHODS

The adult salmonid trap is located adjacent to the south shore adult fish ladder of Lower Granite Dam on the Snake River at river kilometer 695 (from the mouth of the Columbia River). When in operation, a gate is rotated across the fish ladder to block upstream fish passage. Fish then enter the trap attraction pool and pass through pipes with coded-wire tag (CWT) and passive integrated transponder (PIT) tag detectors.

Tagged fish are then diverted to a holding area (for PIT-tagged fish, only those selected using the separation-by-code (SbyC) diversion gates), while non-tagged adults continue through the pipes to the exit ladder where they re-enter the main fish ladder. Diversion gates can also be set to sample the run-at-large at a pre-selected sample rate.

The trap has a gravity-flow dewatering system that allows passing fish directly from the holding area to an anesthetic tank without handling, which reduces stress on the fish. Fish are sedated with clove oil, inspected and sample data collected and recorded, and either placed in a freshwater recovery tank for release back to the fish ladder, or to holding tanks for eventual transfer to trucks to haul fish from the facility. Harmon (2003) provides further detail on the trap and its operation.

The adult trap is generally operated 7 days/week, 24 hours/day during the adult migration period, beginning in early March through November each year, except during short periods in the summer when high water temperatures prevent its operation.



## RESULTS AND DISCUSSION

During the fall and winter of 2005 we operated the adult trap from 6 September through 21 November. Fall Chinook salmon, coho salmon *O. kisutch*, and steelhead were monitored with the sample rate for trapping adults set at 13%. Samples were taken automatically 4 times per hour and 24 hours per day for the entire trapping period. We also interrogated previously PIT-tagged fall Chinook salmon using the SbyC system.

Sampled fish were inspected for species, lengths, brands, VI-tags, PIT-tags, and fin-clips. Scale samples were taken on some steelhead and fall Chinook salmon. Chinook salmon collected at the trap and transported to hatcheries were inoculated and opercule punched. The following data is preliminary and will be further analyzed by the various researchers from other agencies for whom the data were collected.

We collected and handled a total of 1,799 fall Chinook salmon. Of those fish, 928 adults and 126 jacks were transported to Lyons Ferry Hatchery on the Snake River in Washington. In addition, 419 adults and 45 jacks were transported to the Nez Perce Tribal Hatchery on the Clearwater River in Idaho. The remaining 281 fall Chinook salmon were passed upstream. Run reconstruction and hatchery data taken from the 13% sample, and data collected from fall Chinook salmon transported to the hatcheries has not been finalized, but will be available in the future from Debbie Milks, Washington Department of Wildlife (WDFW). Ninety-seven PIT-tagged fall Chinook salmon were collected by the sort-by-code system and sampled. Scales were taken from these fish. More detailed information on this study is available from Doug Marsh, National Marine Fisheries Service.

A total of 19,121 steelhead were collected and handled during the sampling period. Data taken from these fish will be analyzed to evaluate the A and B run segments as well as the hatchery/wild composition of the run. Data will be analyzed and reported by Bill Horton, Idaho Department of Fish and Game. We also documented 95 freeze brands on steelhead that were released in the Snake River Basin as juveniles. Additional information on these fish is available from Mark Shuck (WDFW) and Ralph Roseberg (USFWS).

We radio-tagged 36 coho salmon between 21 September and 9 October for the Nez Perce Tribe (NPT). Detailed information on this study is available from Scott Everett of the NPT. We also radio-tagged 106 hatchery steelhead with adipose fins intact for the U. S. Fish and Wildlife Service (USFWS). More information about this study is available from Aaron Garcia, USFWS, Dworshak National Fish Hatchery.

## **ACKNOWLEDGMENTS**

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## **REFERENCES**

Harmon, J. R. 2003. A trap for handling adult anadromous salmonids at Lower Granite Dam on the Snake River Washington. North American Journal of Fisheries Management: 23:989-992.